



BU941

NPN SILICON TRANSISTOR

NPN POWER DARLINGTON HIGH VOLTAGE IGNITION COIL DRIVER

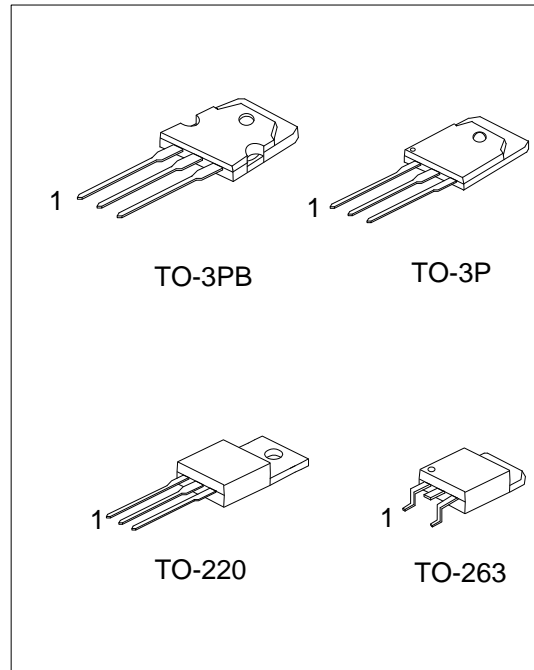
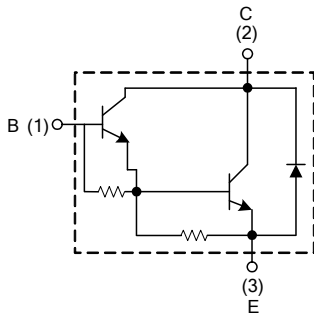
FEATURES

- * NPN Darlington
- * Integrated antiparallel collector-emitter diode

APPLICATIONS

- * High ruggedness electric ignitions

INTERNAL SCHEMATIC DIAGRAM



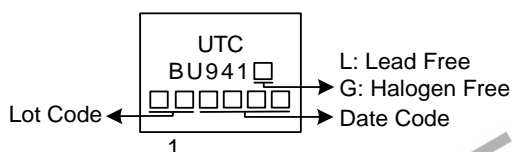
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BU941L-TA3-T	BU941G-TA3-T	TO-220	B	C	E	Tube
BU941L-TQ2-T	BU941G-TQ2-T	TO-263	B	C	E	Tube
BU941L-TQ2-R	BU941G-TQ2-R	TO-263	B	C	E	Tape Reel
BU941L-T3P-T	BU941G-T3P-T	TO-3P	B	C	E	Tube
BU941L-T3B-T	BU941G-T3B-T	TO-3PB	B	C	E	Tube

Note: Pin assignment: B: Base C: Collector E: Emitter

<p>BU941G-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TQ2: TO-263, T3P: TO-3P, T3B: TO-3PB</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V_{CES}	500	V
Collector-Emitter Voltage		V_{CEO}	400	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	15	A
Collector Peak Current		I_{CM}	30	A
Base Current		I_B	1	A
Base Peak Current		I_{BM}	5	W
Total Power Dissipation ($T_C=25^\circ\text{C}$)	TO-3P	P_D	155	W
	TO-3PB			
	TO-220		150	W
	TO-263			
Junction Temperature		T_J	+175	$^\circ\text{C}$
Storage Temperature		T_{STG}	-65 ~ +175	$^\circ\text{C}$

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-3P	θ_{JA}	30	$^\circ\text{C/W}$
	TO-3PB			
	TO-220		62.5	$^\circ\text{C/W}$
	TO-263			
Junction to Case	TO-3P	θ_{JC}	0.8	$^\circ\text{C/W}$
	TO-3PB			
	TO-220		0.83	$^\circ\text{C/W}$
	TO-263			

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}^*$	$I_C=1\text{mA}$, $V_{CLAMP}=400\text{V}$, $L=10\text{mH}$ (see Fig. 1)	400			V
Collector Cut-Off Current	I_{CES}	$V_{CE}=500\text{V}$, $V_{BE}=0$ $V_{CE}=500\text{V}$, $V_{BE}=0$, $T_J=125^\circ\text{C}$			100 0.5	μA mA
Collector Cut-Off Current	I_{CEO}	$V_{CE}=450\text{V}$, $I_B=0$ $V_{CE}=450\text{V}$, $I_B=0$, $T_J=125^\circ\text{C}$			100 0.5	μA mA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0$			20	mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}^*$	$I_C=8\text{A}$, $I_B=100\text{mA}$ $I_C=10\text{A}$, $I_B=250\text{mA}$ $I_C=12\text{A}$, $I_B=300\text{mA}$			1.6 1.8 2	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}^*$	$I_C=8\text{A}$, $I_B=100\text{mA}$ $I_C=10\text{A}$, $I_B=250\text{mA}$ $I_C=12\text{A}$, $I_B=300\text{mA}$			2.2 2.5 2.7	V
DC Current Gain	h_{FE}^*	$V_{CE}=10\text{V}$, $I_C=5\text{A}$	300			
Diode Forward Voltage	V_F	$I_F=10\text{A}$			2.5	V
Functional Test		$V_{CC}=24\text{V}$, $V_{CLAMP}=400\text{V}$, $L=7\text{mH}$ (see Functional Test Circuit)	10			A
Fall Time	t_F	$V_{CC}=12\text{V}$, $V_{CLAMP}=300\text{V}$, $V_{BE}=0$, $R_{BE}=47\Omega$, $L=7\text{mH}$, $I_C=7\text{A}$, $I_B=70\text{mA}$		0.5		μs
Storage Time	t_s	(see Fig.2)		15		

* Pulsed: Pulse duration=300 μs , duty cycle 1.5%

■ ELECTRICAL CHARACTERISTICS (Cont.)

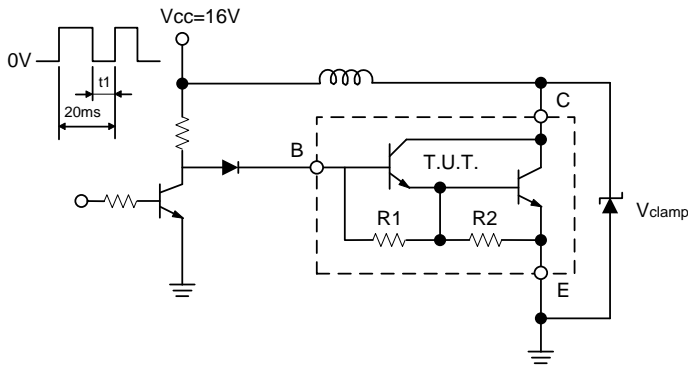


Fig. 1 Sustaining Voltage Test Circuit

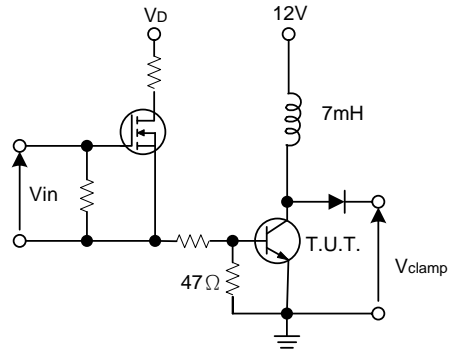
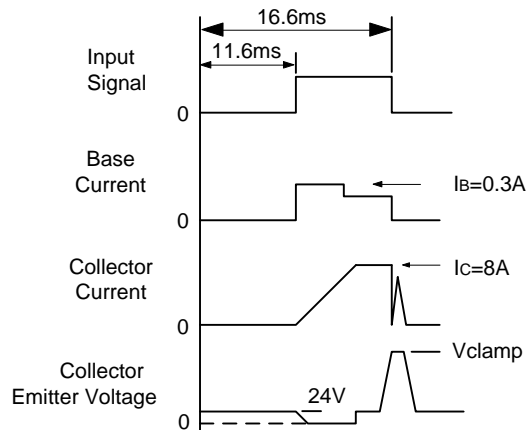
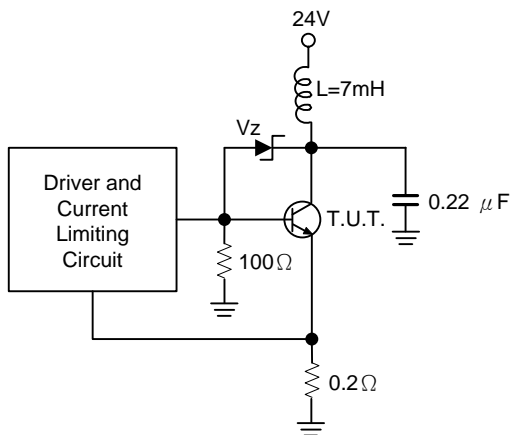
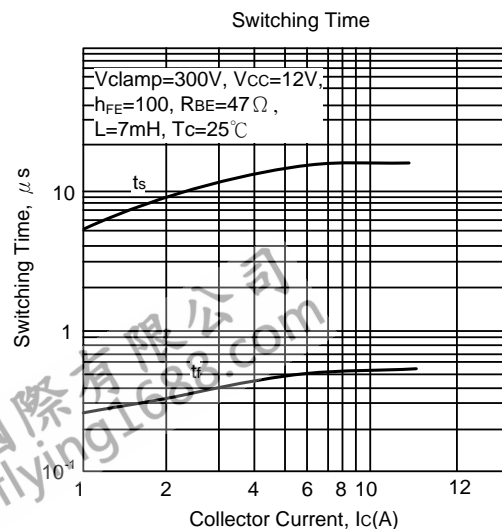
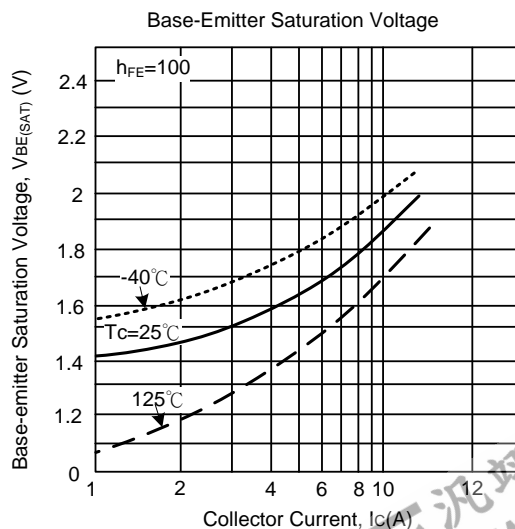
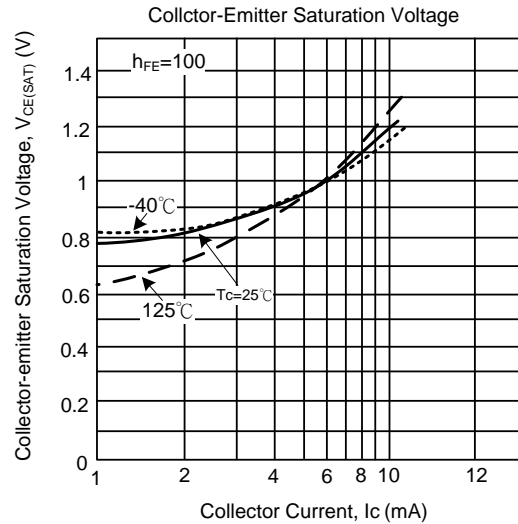
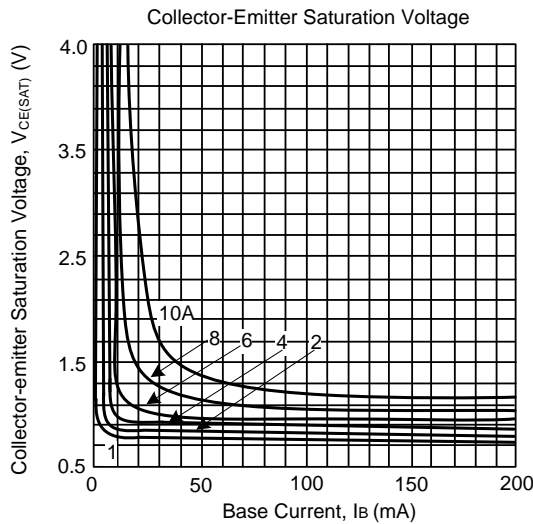
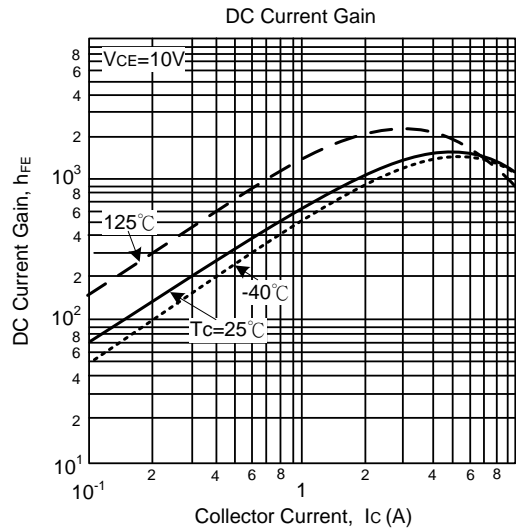
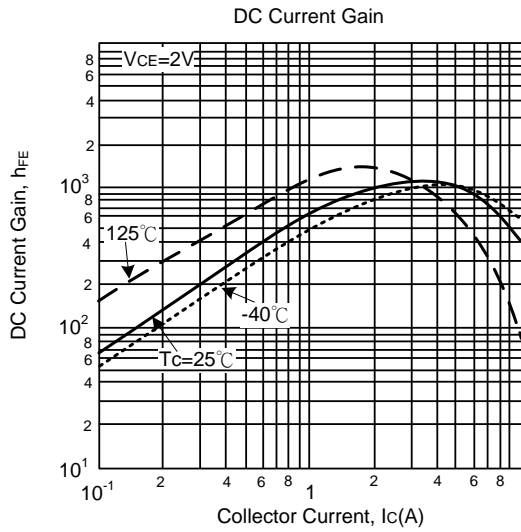


Fig. 2 Switching Time Test Circuit

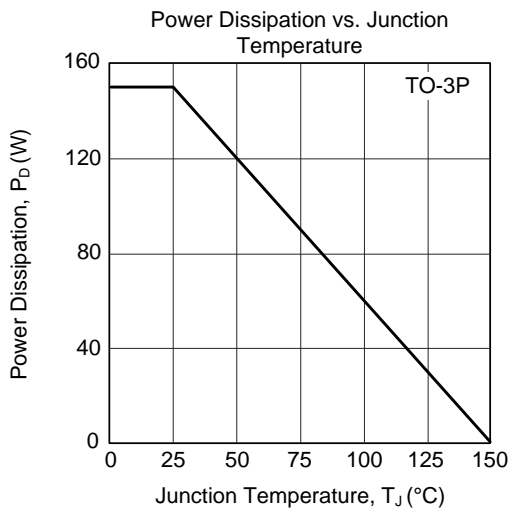
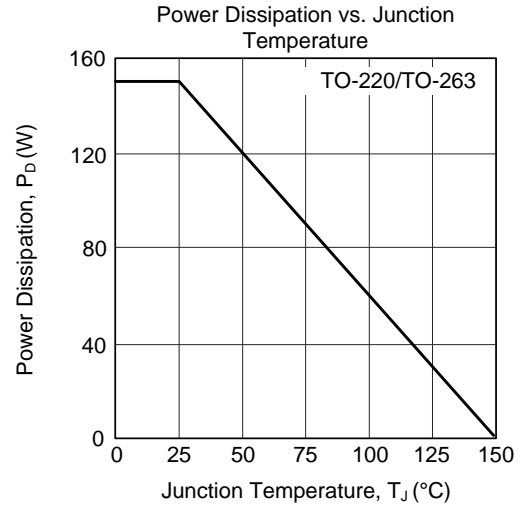
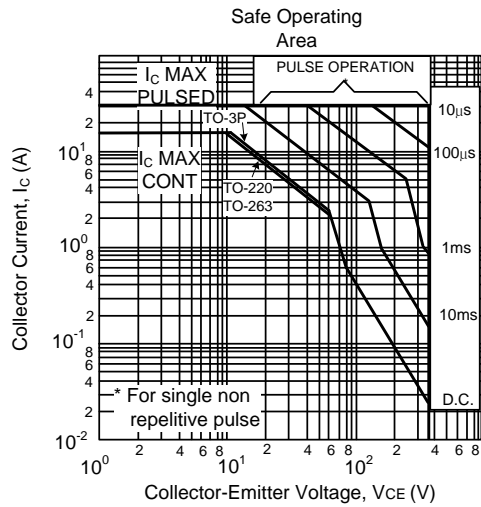
■ FUNCTION TEST CIRCUIT



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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